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HOWES' FILTERS AND FAUCETS

Illustrated and——————
——Descriptive Catalogue
OF GOODS MADE BY THE

SANITARY IMPROVEMENT CO.

GENERAL OFFICE AND WORKS AT SPENCER, MASS.

Boston Office, 27 Devonshire Street.

The Franklin Press.
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CHAS. N. PROUTY, President. JOSEPH W. TEMPLE, Treasurer.
HENRY M. TOWER, Superintendent.

THE SANITARY IMPROVEMENT CO.

9·30·87.

MANUFACTURERS AND DEALERS IN

HOWES' WATER APPLIANCES

AND OTHER SPECIALTIES.

GENERAL OFFICE AND WORKS AT SPENCER, MASS.
BOSTON OFFICE, 27 DEVONSHIRE STREET.

TO THE TRADE.

Americans are wonderfully progressive. Unlike Asiatics, they will not use the crude mechanical devices of their forefathers, if new and better ones can be obtained. An article in use today is often discarded on the morrow,—superceded by something better adapted to the purpose. The finest talent is constantly on the alert to discover more convenient appliances. We excel the world on this line. There has never been a nation or a time since nations were, when devices were so plentiful to lesson labor and provide easy and agreeable means for the accomplishment of almost every purpose. This is particularly true of inventions appertaining to the household. Every contrivance that ingenuity can conceive is called into requisition to aid in lightening the cares of domestic life. Our skill in this direction has reached a stage of development, that is truly marvellous. Many of these later devices are so perfectly adapted to the end sought that their use is a luxury. This can be said of the Howes' Water Appliances. Those who have used them endorse them in the highest terms. In the principles of their construction they represent as radical a departure from old methods and as satisfactory a relief from disagreeable devices as the revolution in sewing inaugurated by that Spencer genius, Elias Howe, Jr. His sewing machine has won for him a fame as wide and lasting as the universe, but not a greater or a more deserving fame than should be accorded Mr. John Howes. Both have given to the world ideal inventions, which in their respective lines mark the beginning of new eras. Possessing remarkable merit, THE SANITARY IMPROVEMENT CO. was specially organized to manufacture the articles patented by Mr. Howes. Having fully perfected their plant, they are now prepared to supply the trade with these desirable goods. Aside from other valuable qualities, they are the most economical goods to buy and use, as they are designed to endure hard and constant service without serious injury. The trade are cordially solicited to give them a trial.

THE SANITARY IMPROVEMENT CO.

Spencer, Mass., Oct., 1887.

TERMS CASH.

Goods subject to discount.

Prices subject to change without notice.

All claims for correction or deduction must be made within ten days after receipt of goods.

All goods, after shipment, at risk of purchaser.

Boxing and cartage charged at cost.

To avoid mistakes in ordering, please specify Catalogue figure.

Goods will be sent C. O. D. to parties without commercial rating, on receipt of 25 per cent of the selling price.

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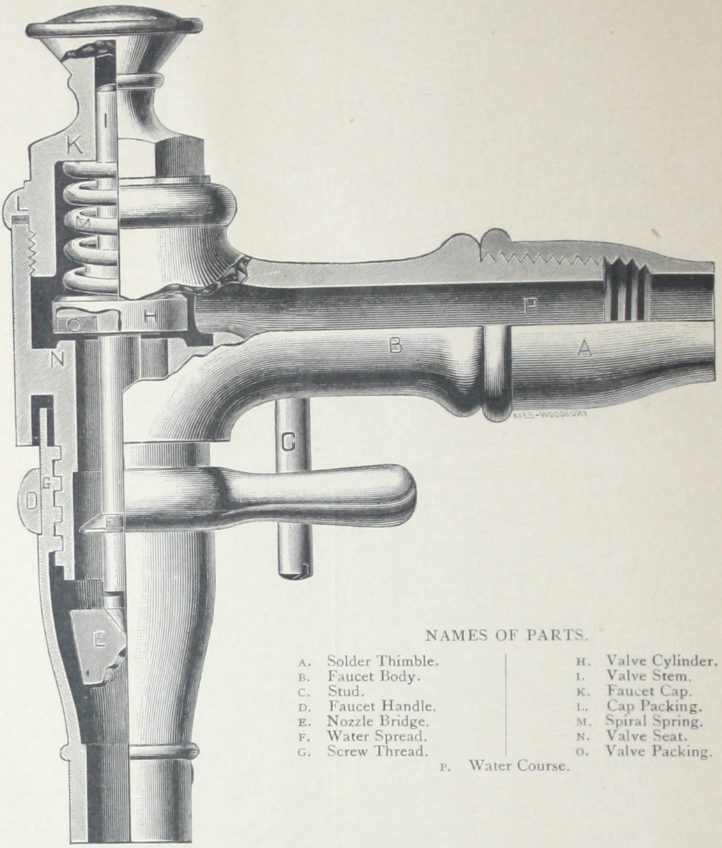
HOWES' FAUCET.

Patented April 18, 1882.



NAMES OF PARTS.

A.	Solder Thimble.
B.	Faucet Body.
C.	Stud.
D.	Faucet Handle.
E.	Nozzle Bridge.
F.	Water Spread.
G.	Screw Thread.
H.	Valve Cylinder.
I.	Valve Stem.
K.	Faucet Cap.
L.	Cap Packing.
M.	Spiral Spring.
N.	Valve Seat.
O.	Valve Packing.
P.	Water Course.

Fig. 1.

Full Size Section. 1-2 in. Faucet. Beaded Shank.

DESCRIPTION OF PARTS AND OPERATION OF THE HOWES' FAUCET.

The faucet opens with an outward, and closes with an inward movement of the handle, D. The handle is adjustable on the nozzle, and should always be secured in a position which will allow at least one-fourth of an inch play between the point where the handle touches the stud, and the position of handle, just as the valve commences to raise. The nozzle raises by means of the square threaded screw, G, and as the bridge, E, comes in contact with the base of valve stem, I, the valve is raised off its seat. The water flows past the valve, is spread by the disk, F, and so checked by the internal ledge on lower end of nozzle, that the delivery of a clean smooth stream is always secured. On reversing the handle, the valve closes with and by the force of the water pressure. The spring serves to prevent any vibration of valve; aids in closing on light pressures, and prevents any possible dripping which otherwise might occur from atmospheric pressure lifting the valve slightly when water is being freely drawn on lower levels. The great leverage gained over the screw, by the handle, makes the opening or closing of the faucet very easy. Experiment has demonstrated that in ordinary cases, the minimum limit of time for closing faucets to prevent water hammer, is one second. The natural closing of the Howes' requiring about a half second more, it follows that water hammer is unknown unless caused maliciously. The valve is always kept in line guided by the reamed hole in the cap. The packing is not worn by the action of sand in the running water. All grit expends its force against the metal cylinder.

THE HOWES' FAUCET.

We are happy to introduce to the trade an article of such remarkable merit as the Howes' Faucet. The inventor not only undertook to produce a faucet which should overcome all objections to those in use, but also one that should embody every desirable feature. How well he accomplished the task we will let those tell who have enjoyed the pleasure of using them. How difficult the problem may be imagined when it is known that the field he entered had been traversed again and again by the ablest inventors. They sought to remedy defects by readjustment, or by a change in the combination of parts. He concluded that the end sought could not be attained without a radical reconstruction. Perfectly familiar with mechanical principles, Mr. Howes commences the work. He culls here and there devices adapted to his purpose. He combines them with rare skill and judgment. Finally he witnesses the completion of his cherished purpose. The peerless faucet exists, a monument to inventive talent, unrivalled in excellence, challenging the admiration of the world. Below we note some of the more salient points of the Howes' Faucet, and by way of contrast some of the undesirable features of those in common use.

The Howes' Faucet has no "stuffing box" to facilitate leakage and dripping. No provision for soiling or staining the polished metal or marble.

The Howes' Faucet has "very little friction," hence its durability is maximum. The working parts are not exposed to the action of dust, water, or sediment.

The Howes' Faucet has no "sticking point," no place where friction overcomes strength. No "monkey wrench" or "pipe tongs" needed to open or close it.

The Howes' Faucet causes no "sprained wrists" nor "blistered hands," such as often attend the tedious, awkward, twisting motion incident to compression work. One quarter turn is sufficient to open or close the faucet, and its action is so easy that the feeblest find no fatigue attending the exercise.

The Howes' Faucet has no "water hammer" attachment. No provision for paralyzing the nervous system or causing a disaster by bursting the pipes. It is the only quickly closing faucet adapted to heavy pressures.

The Howes' Faucet has no "shoddy packing." The best stock only is used, compactly moulded, and perfectly homogeneous.

The Howes' Faucet has no "screw-forcing, rotary motion" device for grinding gritty substances into the packing or seat. It is constructed on better principles. Grit injures neither packing nor seat.

The Howes' Faucet has no "cam motion" to destroy one side of the packing by an irregular grinding movement. The valve always moves at right angles with its seat.

In the Howes' Faucet no opportunity has been allowed the packing to assume a shape other than that best adapted to its use. For this reason it is confined in a metal cylinder, and always maintains its form under the highest pressures.

The Howes' Faucet has no "spray nozzle" attachment. It discharges a round, smooth, straight, solid stream.

The Howes' is not exclusively a cold water faucet. It is equally adapted for use on hot water or steam.

The Howes' Faucet is also a perfect "vacuum valve." Where used no boiler can collapse; no running from cellar to attic when desiring to drain the pipes. By shutting off supply and opening faucet a complete drainage of all pipes above is quickly effected.

The Howes' Faucet is constructed on "absolutely correct" scientific principles, and is destined to as largely supercede the ordinary faucet of the day as compression work has superceded the old plug faucet.

The Howes' Faucet cannot be made to compete in first cost with the cheap goods which flood the market, but the price at which they are sold is so little above the price of the ordinary faucet, that in view of their ability to endure hard service, their freedom from all undesirable qualities, the ease and simplicity of their action and the continual pleasure attending their use, the item of slight additional first cost is not worth consideration.

HOWES' FAUCET.

SHORT SHANK. IRON PIPE.

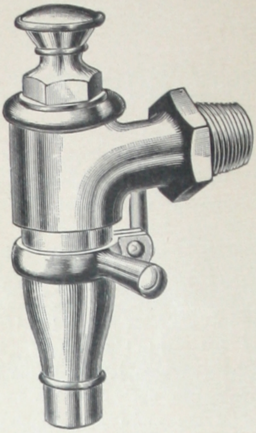


Fig. 2.

SIZE,	$\frac{1}{2}$	$\frac{3}{4}$
Finished, per doz.	$16.20	$21.75
Nickeled,	17.70	23.75
Silvered,		

This pattern is desirable where room is an object. With it the plumber will find no difficulty in "getting back" far enough to satisfy any one.

HOWES' FAUCET.

LONG SHANK. IRON PIPE.

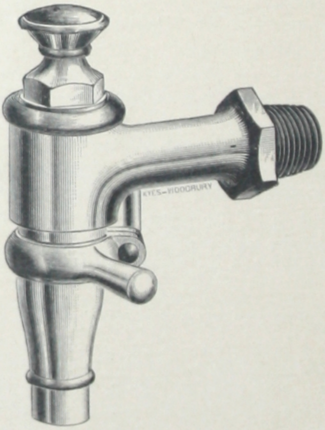


Fig. 3.

SIZE,	$\frac{1}{2}$	$\frac{3}{4}$
Finished, per doz.	$16.50	$22.00
Nickeled,	18.00	24.00
Silvered,		

All our faucets may be connected with lead pipe by the use of our "Spencer" pattern solder thimble, which is considered to be the best on the market, and sold at a very low price. See p. 8.

HOWES' FAUCET.

BEADED SHANK. IRON PIPE.

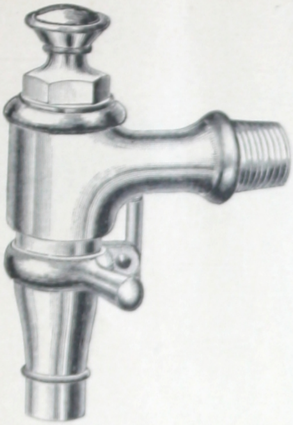


Fig. 4.

Size,	½	¾
Finished, per doz.	$16.50	$22.00
Nickeled,	18.00	24.00
Silvered,		

This pattern was designed at the request of a leading plumber, for use on lead pipe work, in connection with our "Spencer" pattern solder thimble, as shown in Fig. 1. The combination makes a fine finish.

HOWES' HOSE BIBB.

IRON PIPE.

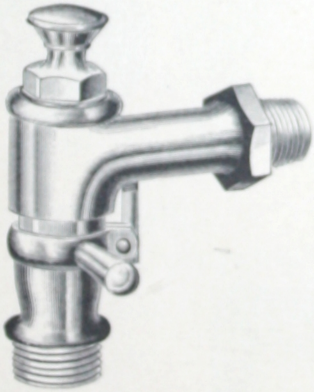


Fig. 5.

Size,	½	¾
Finished, per doz.	$17.50	$23.00
Nickeled,	19.00	25.00
Silvered,		

When these Bibbs are used with hose they should be opened wide, so the top of nozzle will come against packing in the recessed faucet body, and thus avoid weeping at the joint, from back pressure.

HOWES' FLANGED FAUCET, NUT AND BENT COUPLING.

LONG SHANK.

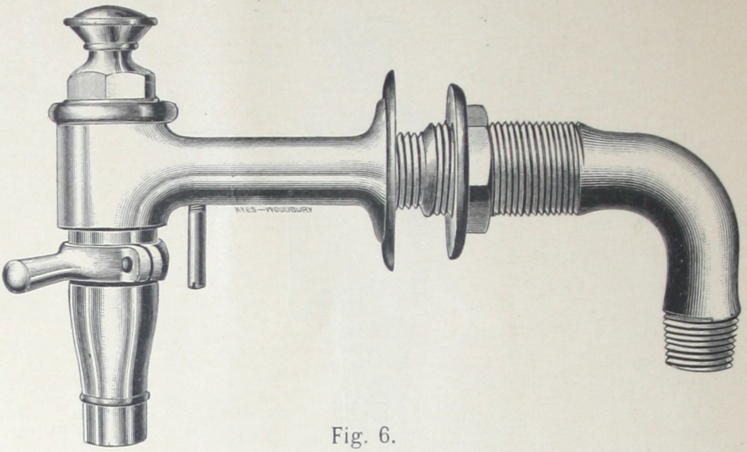


Fig. 6.

Size,	$\frac{1}{2}$	$\frac{3}{4}$
Finished, per doz.	$17.50	$23.00
Nickeled,	19.00	25.00
Silvered,		
Flange Nut and Bent Couplings,	5.50	7.50

We also make a line of short shank flanged Faucets especially for laundry use.

HOWES' FAUCET PACKINGS.

MADE BY JENKINS BROS.

We have packings of three densities:

No. 1. Hard, for pressures above 100 lbs.
No. 2. Medium, for pressures from 10 to 100 lbs.
No. 3. Soft, for pressures less than 10 lbs.

Size,	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Price per doz.	.75	.80	.90

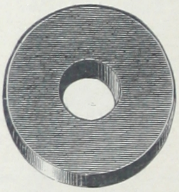


Fig. 7.

		Diameter Outside.	Diameter Hole.	Thickness.
Size,	$\frac{3}{4}$	$\frac{61}{64}$	$\frac{19}{64}$	$\frac{11}{64}$
"	$\frac{1}{2}$	$\frac{46}{64}$	$\frac{18}{64}$	$\frac{10}{64}$
"	$\frac{3}{8}$	$\frac{40}{64}$	$\frac{16}{64}$	$\frac{8}{64}$

BIBB THIMBLES.

"SPENCER" PATTERN.

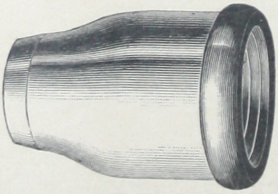


Fig. 8. $1\frac{1}{4}$ inch.

Full Size.

"BOSTON" PATTERN.

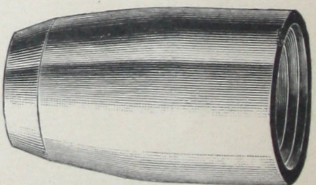


Fig. 9. $1\frac{1}{2}$ inch.

Size,	$\frac{1}{2}$	$\frac{3}{4}$
Finished, per doz.	$1.50	$2.00

To accommodate the trade we make the "Spencer" pattern in two lengths, viz.: — $1\frac{1}{4}$ and $1\frac{1}{2}$ inches.

HOWES' BASIN BIBB.

GROUND JOINT.

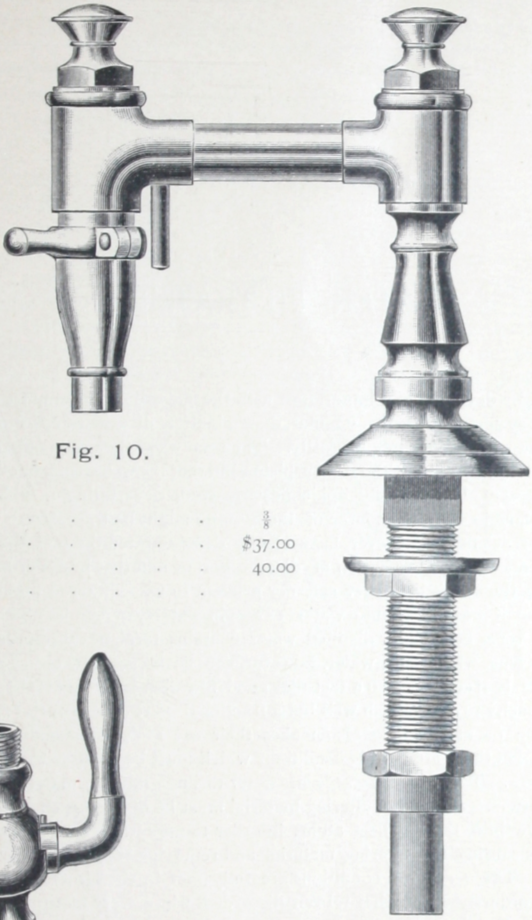


Fig. 10.

Size,	⅜
Finished, per doz.	$37.00
Nickeled,	40.00
Silvered,	

EVANS' GAS MIXERS.

MADE FOR HARD SERVICE.

The ¾ inch and 1 inch sizes have union connections.

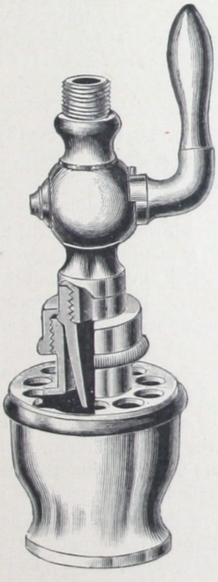


Fig. 11.
1 in. Size.

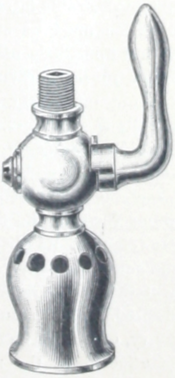


Fig. 12.
⅜ Size.

Size,	⅜	½	¾	1 in.
Finished, per doz.	$12.00	$14.40	$19.20	$21.60
Nickeled,	13.20	15.60	21.60	24.00

WATER FILTRATION.

This art is rapidly developing in importance with the growth of the country and the extension of the water-service system; while the popular dissemination of scientific literature has partially familiarized the people with its absolute necessity. The time was, when the unfiltered well, spring or aqueduct water supplied the people without a suspicion but that the water thus obtained was eminently fit for domestic purposes. Occasionally epidemics occurred, devastating neighborhoods, villages, or cities without a thought that the source of the scourge might be traceable to the water supply. The investigations of scientists, however, have clearly demonstrated the fact that water is one of the most prolific agents for the distribution of disease germs, and that however bright and clear the water may appear to the eye, it is neither safe nor prudent to use unfiltered water for domestic purposes. It is doubtful if *absolutely* pure water exists, in nature, or can be obtained by any known process. Even the very best triple distilled water contains foreign substances. An abundant supply of practically clean, wholesome water, however, can be secured by either gravity or pressure filtration. While this is true, it is also a fact that good filtration is not general. It is rarely a filter is used which has capacity to accomplish well but a fractional part of the work expected of it. The imperfect construction of most kinds also makes their use a delusion and a snare. In order to obtain desirable filtration there are certain conditions which must be complied with. To be of value, filtration must be slow. The rapid passage of water through filtering material necessarily carries with it obnoxious matters. Again, the filtering material must be of the finest, so fine indeed that the water must subdivide into the smallest atoms in order to pass it. There also must be ample and efficient means for cleansing the filtering material and removing the accumulated matter almost as rapidly as it gathers. These several conditions are fully met in the Howes' Filter. All the undesirable qualities of ordinary filters have been discarded, while every meritorious feature has been retained. In addition to this, Mr. Howes has introduced many new and novel mechanical devices, which must supercede old methods. The Howes' Filter filtrates slowly. The maximum velocity of water through the filtrating medium is less than one inch per second, or one hundred and fifty times slower than its discharge at faucet. The minimum slowness is fifteen thousand times less the maximum velocity. Between these two extremes, the speed of filtration can be so regulated by the will of the operator that a pail of water can be drawn either in thirty seconds, or thirty hours, as desired. Thus results are obtainable widely enough at variance to accommodate either those in a hurry, or those who desire the slow filtration of gravity filters. In the Howes' Filter good filtration is effected at the maximum velocity. This will be more apparent when it is known that rivulets flowing down clay banks must run faster than three inches per second in order to disturb the fine particles of clay over which the water courses. This law clearly shows that water flowing at the rate of one inch per second would not have a tendency under such conditions to force suspended matters into fine filtrating material. When matters meet with such an obstruction, they stop and remain quiescent, until moved away by greater force. The filtrating medium in the Howes' Cylinder Filter, Figure 14, is a cylinder of fine wool felt, Figure 39. Inside this cylinder is another one of metal, having a coarse screw thread on the outside. The periphery of this thread comes in contact its whole length with the inner surface of the felt cylinder. This forms a continuous winding channel from top to bottom of the threaded screw, the felt making the outside. The space between the flanges of the metal thread and the depth of groove from periphery forming a channel, a cross section area of which is equal to the area of the diameter of stream to be filtered. All the water that passes through the filter enters at the top and courses around this curvilinear channel, as it would in a pipe. When the filter faucet is opened, water seeks an outlet through the felt. Suspended matters are arrested on the inner felt surface and instantly carried down the channel by the incoming current needed to supply the filter faucet. Thus the filter is being constantly cleansed while filtration is in progress, the bulk of suspended matters finding their way along the circular channel, down into the sediment chamber, where they remain until the direct faucet is opened. For this reason, after considerable water has been filtered the first glass drawn from the direct is frequently highly colored, full of animalcules and floating matter. This will surely be the case if the water contains such foreign substances.

The Howes' Filter is automatically self-cleansing. Its construction in this regard is unique. Like the Eads' jetties of the Mississippi, water is made to do the office work of scouring and removing all obstructions from the channel. Mr. Howes accomplishes in this direction all it is possible to obtain. He compels water to traverse over and over again all the internal surface of the felt, and to judiciously expend its tremendous force in scouring off and carrying away impurities. The greater the water pressure, the more rapid the wash. The velocity of water at five pounds pressure is only one half the velocity of the same stream at seventy pounds pressure. At seventy pounds pressure the velocity of the water as it scours the felt is fifteen feet per second. A large stream, flowing at this same speed, would carry stones twenty inches in diameter. This shows the strength of the current. To obtain this velocity and power in the filter, however, it is essential to confine the stream to a channel not larger than the inlet pipe. To enlarge the area of the cleansing current, as many have done, in trying to attain the same result, and allowing the water to slowly percolate through a large quantity of filtering material, is to vitiate the efficiency of the scheme. Water in a brook may run rapidly into a mill pond, and at the same time an equal volume of water may run rapidly out at the gate, and yet be no perceptible movement of water in the pond. Mr. Howes not only utilizes the full force of the current, but he unites to this centrifugal motion. The water at seventy pounds not only runs at the rate of fifteen feet per second, but it speeds with centrifugal force around and around in a limited circle down a constantly inclined plane, expending on the felt surface all the friction incident to its velocity and constantly changing course. Thus Mr. Howes unites, for cleansing purposes, the forces of gravity, the velocity incident to pressure, centrifugal motion, and friction; a combination at once practical and effective. The filtering medium used in the Howes' Filter is felt, made from the finest of undyed lamb's wool. It has been known for centuries that flannel possessed remarkable virtue for straining milk and clarifying other liquids. Indeed, nothing has ever been found to equal it. Wool possesses peculiar properties. In substance it is horn, and is inoderous and tasteless. Under ordinary conditions it will last for centuries. A filament of wool under a microscope presents a highly polished and even glittering appearance. There are no less than fifteen hundred barbs projecting from each running inch. It is owing to this fact that it can be felted. These projections are so numerous that it is impossible to spin wool without oiling. On the other hand, it is impossible to felt wool without first carefully removing every trace of animal oil or other foreign matter. For pressure filtration, we deem felt to be, all things considered, the best and most practical material to use. Since it is an artificial product, it can be made of any fineness or density needed to accommodate it to the various kinds of water and varying water pressures. It can be felted so dense that water itself cannot pass it, and hence there must be attainable a point of density when water will pass through and nothing else that cannot subdivide itself into the smallest possible atoms; too small, indeed, for the most powerful microscope to detect. We have carefully tested the comparative value of porcelain and wool as filtering mediums. In neither case could there be detected in the filtered water any matter held in suspension, but in most cases that passing through the porcelain showed, on standing, considerable precipitates; that passing through the felt showed none; thus demonstrating the truth that in these cases the porcelain was the more porous substance of the two. Filtration through the porcelain was slower, because the interstices were less numerous than in the felt. There are some objections to the filters in ordinary use which it may be well to notice in this connection as illustrating the superior value of the Howes. The majority of filters are attachable at the faucet nozzle, and the water is shut off back of the filter. This practice is open to grave objections, especially if parties using the filters neglect to properly cleanse them. These small filters catch decaying vegetable substances, and many animalcules daily. The water is shut off, and by gravity runs out of the filter. The warm air of summer, or the hot air of the kitchen in winter, enters. Decomposition sets in, disintegration takes place; the harmless earthy matter is retained in the filter, while the colorless, albuminous portion passes along in the water, and is used without a suspicion of danger. Suspected water should be set in the sun or warm place for several days, and if the water is contaminated by the presence of this colorless infusion there will appear streaked glairy matter, resembling somewhat the white mother of vinegar. This, on examination under a microscope, will be found to be full of life. In the Howes Filter, the filtrating material is submerged constantly in the water. This is the correct principle. Another possible danger is to be found in the use of charcoal as a filtering medium. Those who think a cupful of charcoal adequate to chemically affect the large quantity of water daily used in ordinary families, are listening to theories promulgated a generation ago. There is no question that charcoal possesses desirable qualities for the purification of water, but its power is so quickly exhausted that its use is not practical for domestic purposes. To be effectual, an ordinary sized family ought to use a barrel of charcoal a month. Charcoal, when freshly burned, is a ready absorbent of noxious matters. It takes them into its own body as a sponge sucks water, but like the sponge, there is a limit to its capacity. When full, it can take no more, and no remedy exists for cleansing, except heating to a cherry-red color. After the charcoal has absorbed all the impure gases it can contain, it then merely acts as a strainer, the same as other filtrating materials. Its pores, however, are full of contaminated matter, and so is highly objectionable on that account. Filters of this kind are eminently dangerous, unless daily cared for. The Howes Filter for household use, will be found to possess qualities which commend it to the attention of any who desire a constant supply of clean water. We recommend it cordially to the trade as the only practical pressure filter on the market, and the only one that gives permanent satisfaction.

DESCRIPTION AND OPERATION OF HOWES' NO. 4.

DISK FILTER.

The Filter has two faucets, right hand for filtered, and left hand for direct water. The right hand faucet is designed for use only when clean water is desired. The left hand, when coarse water can be used for purposes such as rinsing sink, washing floors, watering plants, etc. The left hand faucet should be used as often as convenient, and at least once a day should be opened wide for a short time, to allow the water a chance to effectually wash out all foreign matter. Projecting from the back of the filter at A is a threaded nipple for one-half inch iron pipe. By this means the filter is attached to the water pipes. The water inlet is at A. The direct water outlet is underneath the filtering material at C. The filtered water outlet is above filtering material at D. B, B, B, B, B, represents the bottom of a continuous scroll channel, through which water passes from A to C. The top of the metal flange, between these channels, is in a plane, on which the flat, circular disk of felt E is placed. The netting F covers this. The grate G is put in position, the cap J is screwed on, and coming in contact with the studs I, I, on grate, presses the felt securely in a proper position. It will be observed that when the felt covers the water way, there is one continuous channel from A to C, the felt forming the upper side. When the filter faucet is open, the water fills this waterway, passes simultaneously through the whole area of felt surface, and discharges clean, filtered water through aperture D. When filtration is in progress, the debris is constantly accumulating in the channel B, and is gradually kept moving along towards the direct water outlet C, as the inflowing water is forcing its way into the filter to supply the stream drawn from filter faucet. When the direct faucet is opened the force of the current is expended in washing out all heterogeneous substances. The filtration is relatively slow, because the area of felt is so much greater than the area of faucet nozzle. These "disk" filters are particularly desirable on waters containing mostly vegetable or organic substances in suspension. They will give excellent results on pressures above sixty pounds. On light pressures the No. 7 cylinder filters should be used.

HOWES' DISK FILTER.

FOR DOMESTIC USE.

NICKELED OUTSIDE. TINNED INSIDE. WEIGHT 6 LBS.

FELT AREA, 10 SQUARE INCHES.

Patented May 1, 1883, and July 21, 1885.

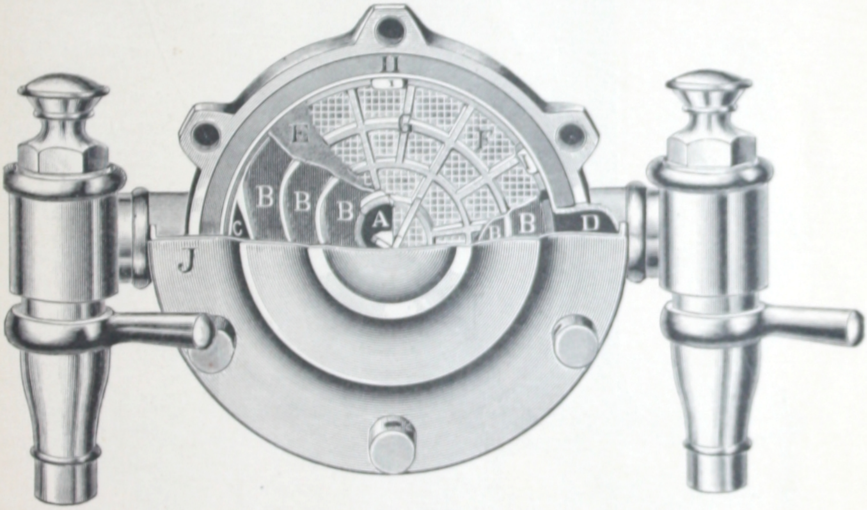


Fig. 13.

No. 4. 1-2 Full Size.

SECTION OF HOWES' DISK FILTER.

NAMES OF PARTS.

A.	Direct Water Inlet.
B.	Scroll Water Way, continuous from A to C.
C.	Direct Water Outlet.
D.	Filtered Water Outlet.
E.	Lamb's Wool Felt.
F.	Wire Screen Cloth.
G.	Movable Grate.
H.	Rubber Packing.
I.	Stud on Grate.
J.	Filter Cap.

Price, for ½ inch pipe, ... $10.00

HOWES' CYLINDER FILTER.

WEIGHS 9 LBS. FELT AREA 30 SQUARE INCHES. COMPOSITION METAL.

NICKELED OUTSIDE. TINNED INSIDE.

Patented July 10, 1883, and April 5, 1887.

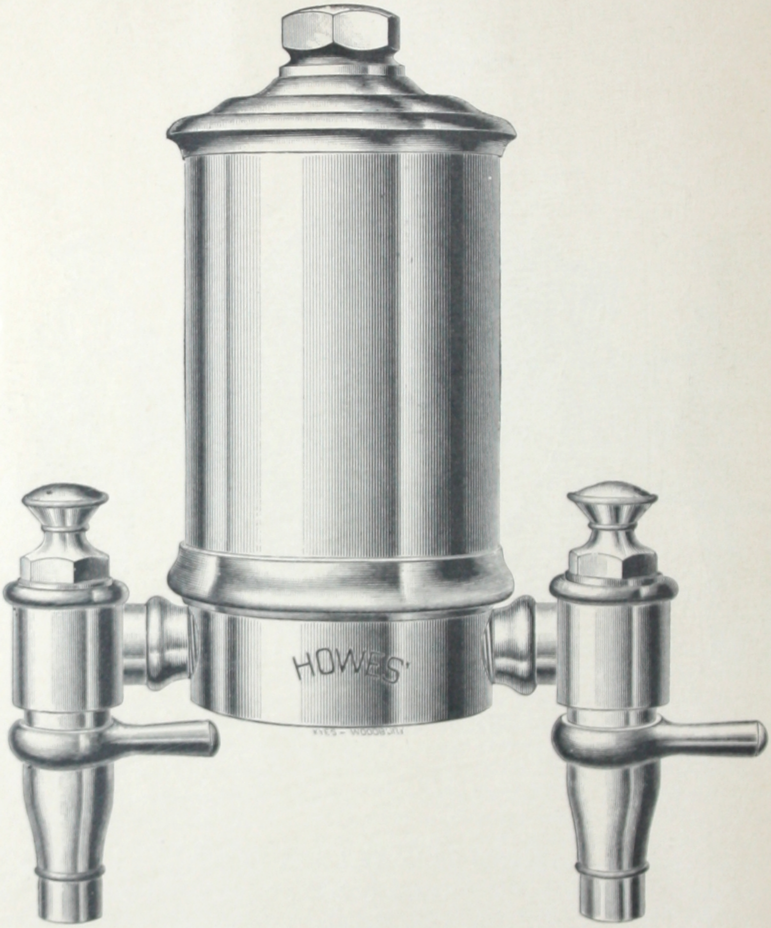


Fig. 14.

No. 7. 1-2 Full Size.

This is the size filter more generally used for domestic purposes. It has large filtering area, and capacity for difficult and extended service.

HOWES' FILTERS.

FOR CELLAR USE.

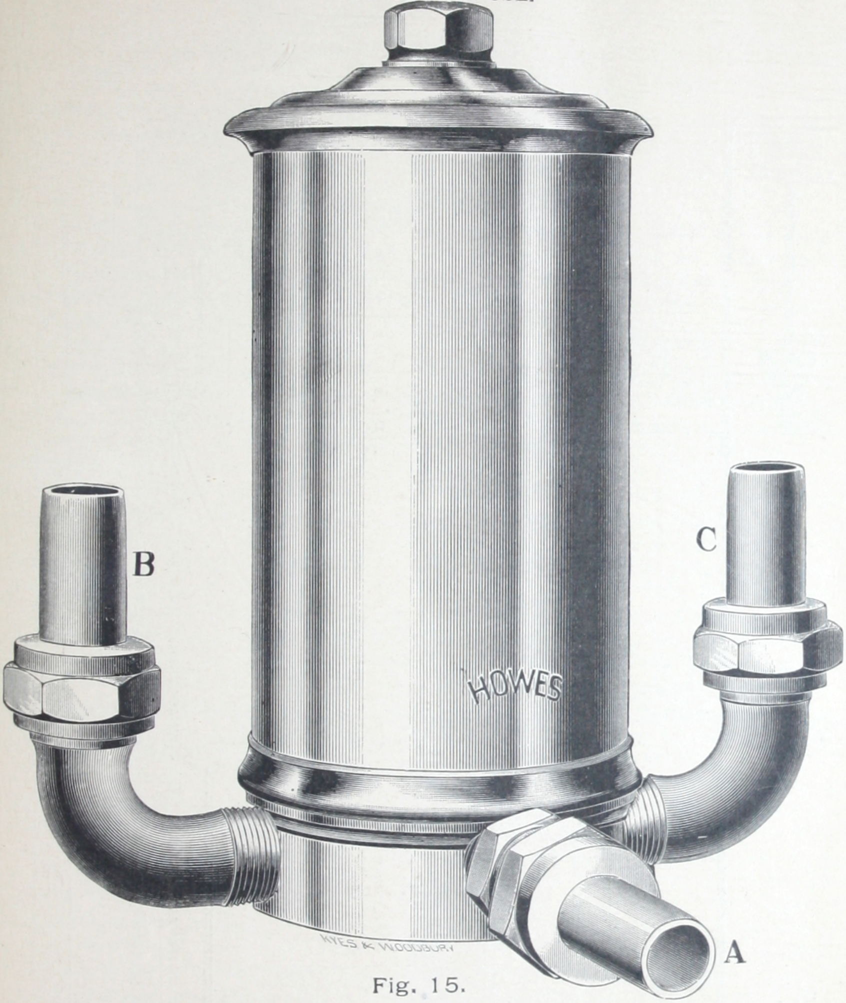


Fig. 15.

No. 9. 1-2 Full Size.

	Felt area.	Metal.	Weight.
No. 9.	70 sq. inches.	Composition, nickeled.	15 lbs.
No. 10.	200 sq. inches.	Rustless iron.	75 lbs.

A. Inlet pipe.
B. Filtered water pipe.
C. Sediment pipe.

	Size stream.	Price.
No. 9.	$\frac{3}{4}$ in.	$25.00
No. 10.	1 in.	40 00

FITTINGS.

Size.	$\frac{1}{2}$	$\frac{3}{4}$	1 in.
Unions, straight, per doz.	$6.00	$6 75	$8 90
Unions, bent, per doz.	6.75	7.70	9.60

It is often desirable to filter the whole house supply. This is easily accomplished by placing filter in cellar, Fig. 16, next to meter if possible, and pipe filtered water wherever needed. The sediment pipe can run to water closets, etc., and the filter obtains cleansing every time sediment pipe valves are opened. In building new, or repairing old houses, the extra cost of placing these filters on the main is comparatively nominal. Architects familiar with our work specify them. Sketches made and advice freely given to those desiring the same. In ordering, always state water pressure, and size of main.

Patented October 12, 1886, and April 5, 1887.

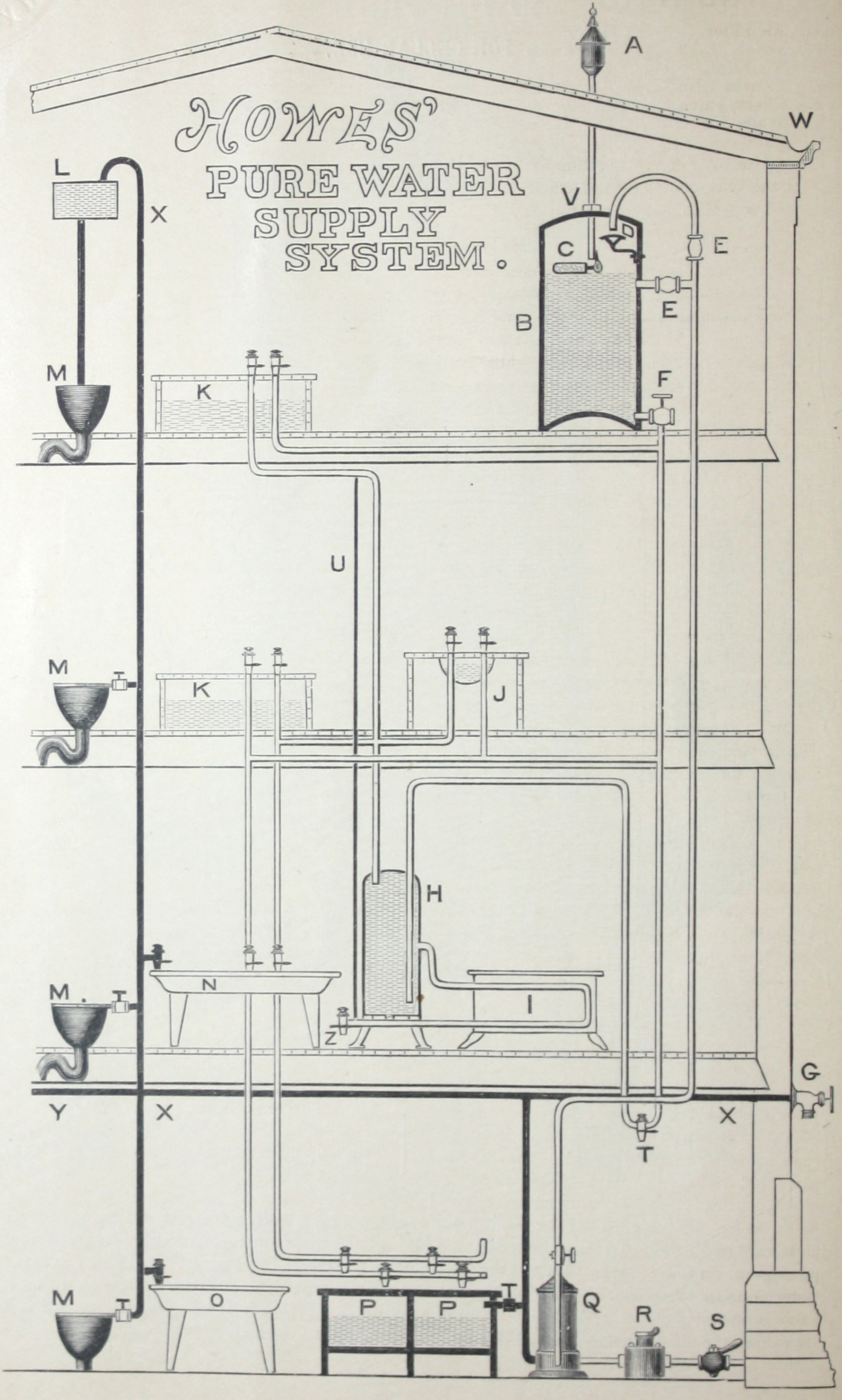


Fig. 16.

THE HOWES' PURE WATER SUPPLY SYSTEM.

A. Air Filter.
B. Supply Tank.
C. Air Float.
D. Convex Disc
E. Check Valve.
F. Water Valve.
G. Sill Cock.
H. Hot Water Boiler.
I. Kitchen Range.
J. Wash Basin.
K. Bath Tub.
L. Closet Tank.
M. Water Closet.
N. Kitchen Sink.
O. Laundry Sink.
P. Sett Tubs.
Q. Howes Filter.
R. Water Meter.
S. Stop Cock.
T. Drainage Bibb.
U. Circulation Pipe.
V. Air Valve.
W. Gutter.
X. Sediment Pipe.
Y. Stable Pipe.
Z. Drainage Bibb.

Howes' Pure Water Supply System will be universally used when its merits are fully known. It is the only complete and efficient system yet devised for furnishing a copious supply of clean, aerated water for domestic purposes.

HOW IT OPERATES.

The water from the street passing the meter R, enters filter A, is cleansed and passes up rising main and enters steel tank B, in attic. The water discharges on convex disc D, and sprays into tank, taking on air as it falls. C is a metallic float. When water in tank is low, the float occupies a perpendicular position, with air valve at V open. As the water rises and the float occupies a horizontal position, then air valve is tightly closed. The valve on main, just above filter A, should be closed enough to only allow the passage into the tank of about one-third the volume of water that would be ordinarily drawn at any faucet in the house in a given length of time. Then when water is drawn from tank, the egress of water being much more rapid than the possible supply, the float falls, with the water, which lets in a fresh supply of air. The faucet being closed, the filtered water gradually fills the tank again and closes the air valve. Thus the tank is alternately and automatically supplied with clean air and fresh clean water. All the air that passes into the tank B is strained from bacteria and other floating matter in the air, by passing through a filter of cotton at A. This air filter contains five layers of cotton, each layer an inch thick. Air passing cotton arranged in this manner, is freed from all contaminating substances, as most carefully demonstrated by the eminent English scientist, Tyndall. By the ordinary method of piping, three pipes from cellar to attic tank are essential, inlet, outlet, and overflow pipes. In the Howes' system two pipes accomplish the work, and the arrangement is such that there is no liability of overflow to destroy the ceilings and bring ruin to nicely furnished apartments. The ordinary method of supplying the hot water boiler from tank in attic, is open to serious objections, since the water in the tank absorbs readily all the foul odors of the house, which rise to the attic, and besides is contaminated more or less with dust and vermin. The cellar filter is automatically cleansed whenever any of the valves or faucets connected with the sediment pipe X, X, X, are opened. By the use of this system an additional feature is obtained for cleansing the filter. The water entering the tank B rises until it condenses the air in the top to a volume the pressure of which is equal to the water pressure. When water is drawn from pipe X the direct water pressure is partially taken off. The air then seeks to regain its normal volume. This action forces the filtered water back through the felt at the same time that the direct water is carrying away the sediment. This makes the cleansing most effectual. But one pipe is needed to supply from tank both the hot and cold water pipes. The tank ordinarily holds one hundred gallons, is of the best boiler steel, and made rustless by the "Bower Barff" process. All the outlets are nicely bushed with composition metal ready for piping. The cellar filter is also rustless, the surface being coated with a magnetic oxide of iron at the works of the Wells Rustless Iron Co., Little Ferry, N. J. (See page 32). We also advise the use of pipe prepared in this manner, having found it, so far in our practice, to be the best water pipe we have ever used.

This system furnishes all the year round an ample supply of clear, limpid water, without hardly a thought or care on the part of those served. Parties get all the advantages that could be derived from a perpetual inflow of the best spring waters, and at so moderate a cost that it makes but a very small item in the expense of fitting up a house. One advantage attending the use of this system is that a storage of water is provided for and can be drawn from in case the street main bursts, or the water for any cause is shut off from the house. An incipient fire might be put out at such a time with simply the water from the tank. Again, this system is particularly desirable where pressures are light. In many places water can not be obtained during the day on the second or third floors, because so much water is being drawn at lower levels. With this system the tank is filled at night, when the pressure is greatest. This furnishes a good supply for the rest of the day. The tank can be made any desired capacity, and any amount of water storage desired be obtained by putting in sufficiently large tanks. E E are check valves. The lower one is closed against the water pressure while tank is filling, and opened when water is cleaning the filter. The upper check valve is open while tank is filling, and closed against the air pressure when water is flowing from tank down the main. Price, one hundred and twenty-five dollars, f. o. b. This includes tank, float, air valve, water and air filters, and the right to use the system.

HOWES' FILTERS.

Easy Method for Setting and Piping to Secure Large Quantities of Filtered Water.

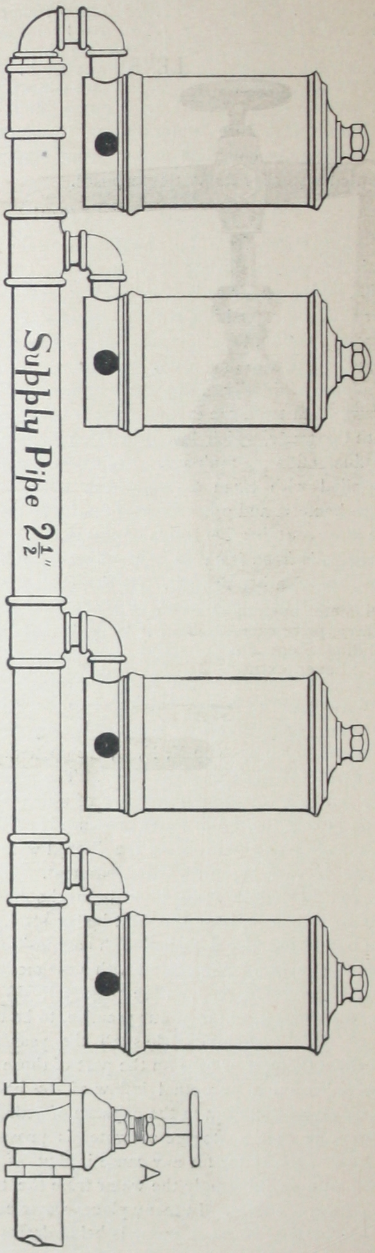


Fig. 17.

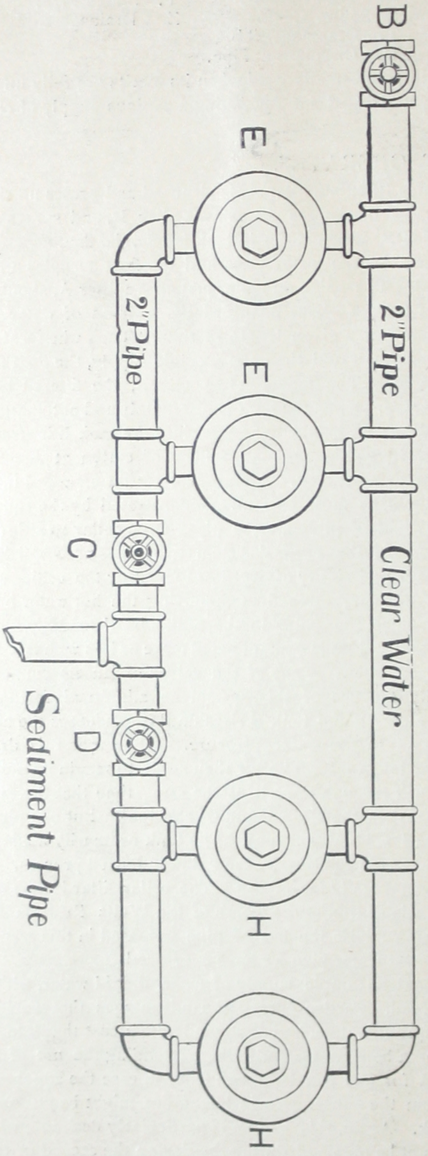


Fig. 18.

By Nesting filters as per plan, any size stream of filtered water can be obtained. The plan represents four No. 10 Filters arranged to supply a two-inch stream of water. The cleansing is attended to as often as need be by the fireman, watchman or janitor, as the case may be. Two filters only are cleansed at the same time. To cleanse H, H, valve A must be open, and B shut. Then open D. The sediment pipe must have an open, free delivery into sewer or elsewhere. To cleanse E, E, close D, and open C. We recommend for use at C and D, lever valves, (Fig. 19,) because they open so quickly. In shutting, take time enough to prevent hammer. For the other valves — we use the "Chapman," (Fig. 20.) For pipe, we always use the "Rustless." See page 32.

FITTINGS FOR HOWES' FILTERS AND WATER SERVICE SYSTEM.

LEVER VALVE.

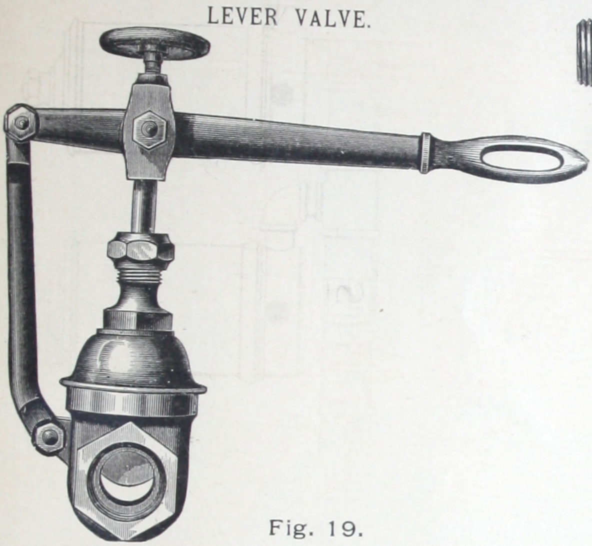


Fig. 19.

Diameter opening,	¾	1	1¼	1½	2	2½	3	3½	4
Valve, price each,	$1.75	2.25	3.25	4.25	6.25	11.50	16.00	30.00	38.00
Sliding Stem and Lever, extra,	$1.20	1.40	1.60	1.80	2.00	2.25	2.50	2.75	3.00

STATIONARY SPINDLE VALVE.

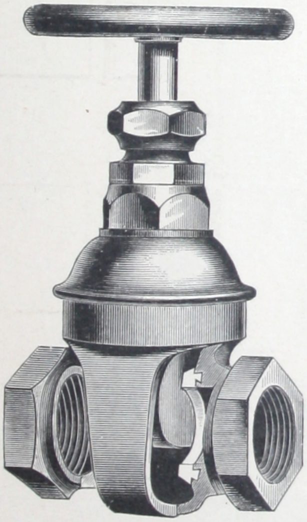
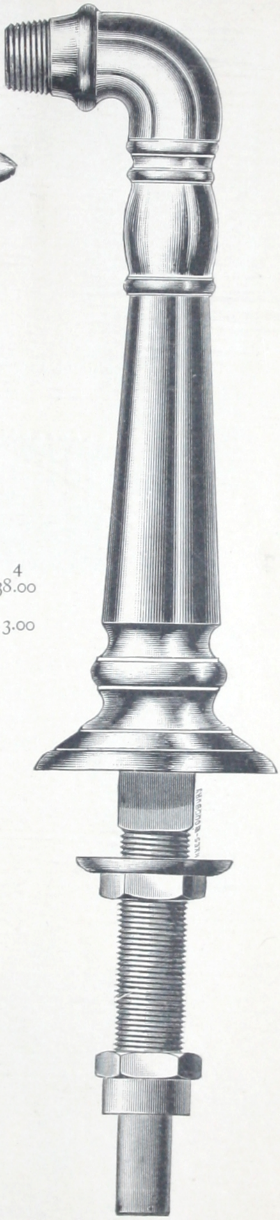


Fig. 20.



Standard, Ground Joint.

Fig. 21. 1-2 full size.

Fig. 21 represents a standard for use in China Closets, at Basins or Sinks in connection with our filters, Nos. 4 or 7.

Size, ...	½ inch.
Nickel Plated, per doz.	$30.00

ELBOW FITTINGS FOR HOWES' FILTERS.

ALL FOR 1-2 INCH PIPE.

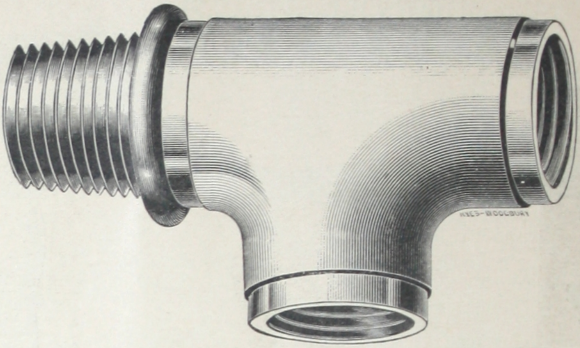


Fig. 22. Full Size.

Price, Nickel Plated, per doz. $8.40

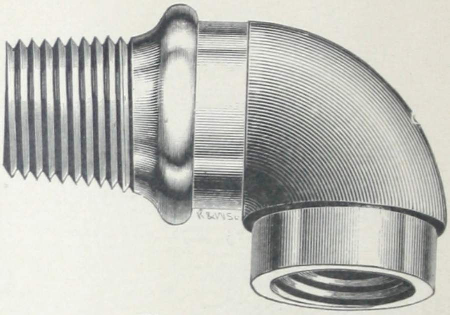


Fig. 23. Full Size.

Price, Nickel Plated, per doz. $6.00

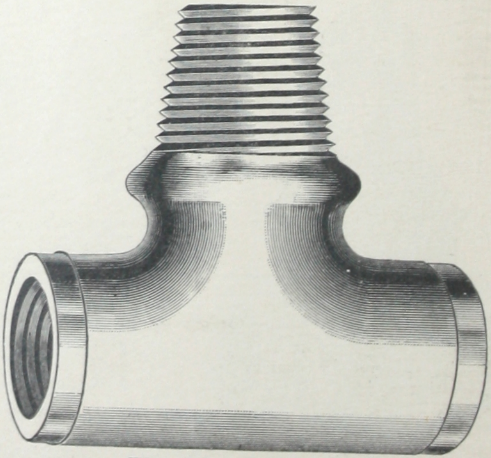


Fig. 24. Full Size.

Price, Nickel Plated, per doz. $8.40

Sometimes it is desirable to pipe filtered water from a No. 4 or 7 Filter to a tenant up stairs, or to a set bowl or other convenient place, for drinking purposes. These elbows are designed especially to facilitate this work.

FITTINGS USED IN CONNECTION WITH HOWES' FILTERS.

CUTS FULL SIZE.

SOLDERING NIPPLE.

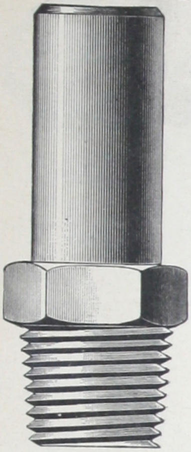


Fig. 25.

½ inch, per doz. $1.60.

BUSHING FOR "FULLER" FAUCET.

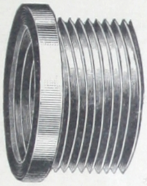


Fig. 26.

Four Sizes, ½, ⅝, ¾, 1 in.
Price, per doz. $1.50.

EXTENSION NIPPLE.

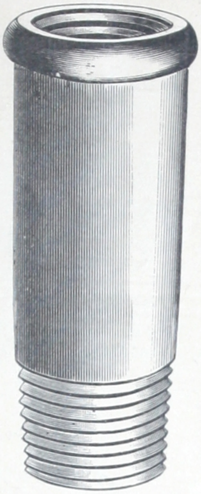


Fig. 28.

½ inch, per doz. $2.25.

CONNECTING NIPPLES.

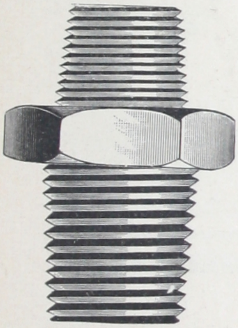


Fig. 29.

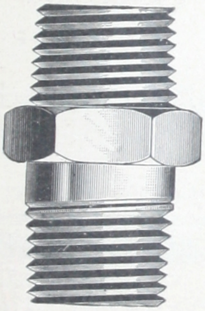


Fig. 30.

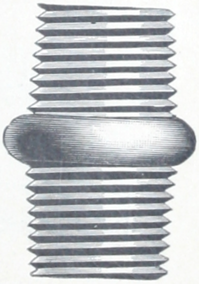


Fig. 31.

Size,	½	¾
Per doz.	$2.00	$2.25

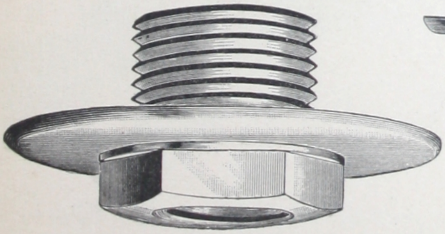


Fig. 32.

Nickeled, per doz. $3.25.

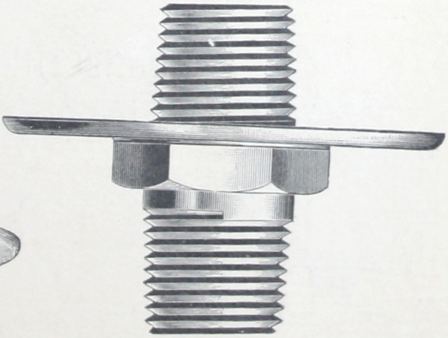


Fig. 33.

Nickeled, per doz. $3.25.

THE BEST WRENCH TO USE ON OUR GOODS IS THE DROP FORGED STEEL WRENCH, SHOWN IN CUT.

EVERY AGENT SHOULD HAVE THEM.

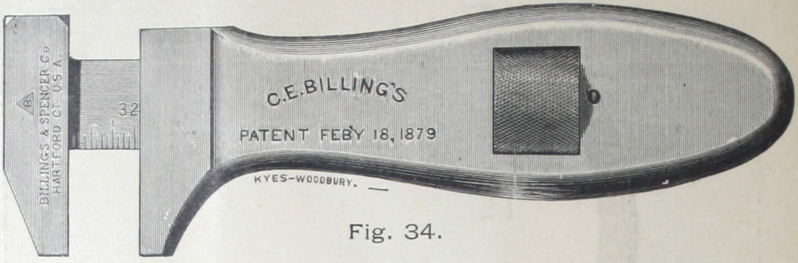


Fig. 34.

	Opens.	Weight.	Price.
4-in. Wrench,	1 inch	6½ oz.	$0.75
5-in. Wrench,	1¼ "	9½ oz.	.85
6-in. Wrench,	1¼ "	15½ oz.	1.00

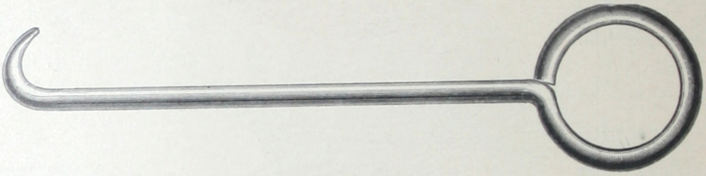


Fig. 35.

FELT HOOK, sent with each No. 4 Filter.

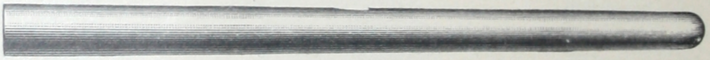


Fig. 36.

LEVER, sent with each No. 4 Filter.

CONNECTING NIPPLES.

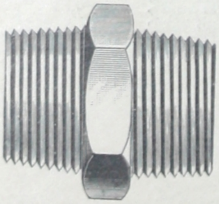


Fig. 37.

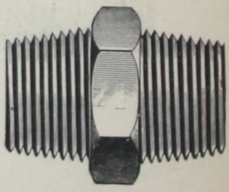
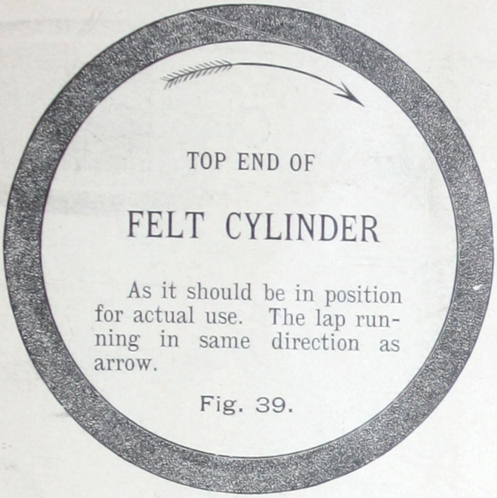


Fig. 38.

Size,	½	⅝
Per doz.	$1.75	$2.00

The Lap shows just above arrow.



TOP END OF

FELT CYLINDER

As it should be in position for actual use. The lap running in same direction as arrow.

Fig. 39.

REAMER.

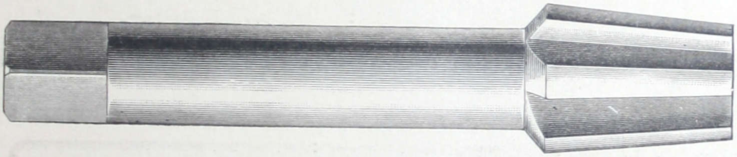


Fig. 40. 80 cents, Net.

TAP. FOR NIPPLES NOS. 37 AND 38.

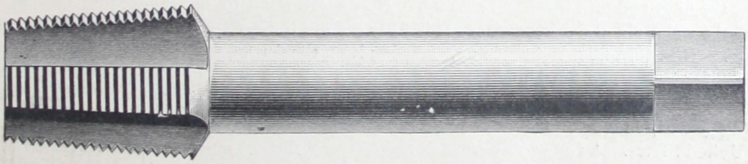


Fig. 41. 80 cents, Net.

In attaching filters it frequently is necessary to saw off old faucets, tap out the thimble end of faucets that remains wiped on the lead pipe. The Reamer and Tap above, are needed in such cases in order to make a good job. They are for use, also, in connection with Nipples, Figs. 37 and 38.

THE "SHAW" FILTER.

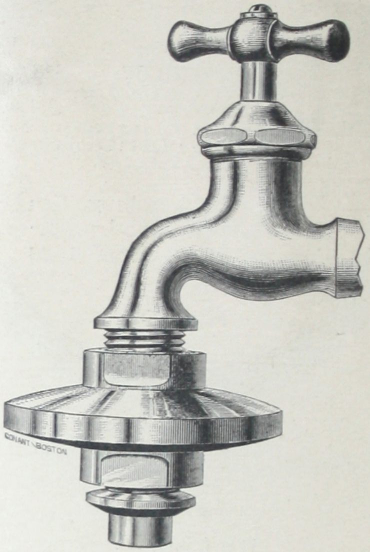


Fig. 42.

1-3 Full Size. Filter for Common Faucet.

Nickel plated, per doz.	$48.00

This is a Felt Filter with seven square inches area filtering surface. It reverses for cleansing. Filter disk easily taken out if desired. An extra one furnished with each filter. Will accomplish good work, but requires attention. It is particularly well adapted for those waters which contain but little silicious matter, and where the chief work to be done is simply to catch the animalcules and vegetable matter, iron rust, etc., which it effectually does.

Directions for Cleansing the Filter.— When you wish to remove the organic matter and animalcules that have been collecting while drawing water, unscrew the bottom and lay it aside. Now unscrew the filter and turn it bottom side up. Now screw it on to the faucet and turn on the full force of the water about five seconds. This will take out the matter collected and cleanse the filter perfectly. Now turn filter right side up, screwing it on the faucet, and screw on the lower part and it is ready for use. The felt should be removed and washed, occasionally, according to the amount of water used. Two wrenches go with each filter, for handy adjustment.

We also keep in stock, to supply the demands of the trade, the best line of small filters to be had in the United States. A full supply of silex and charcoal filters always to be had at the lowest cash prices. Our "Saratoga" strainers, similar to the "Croton," are unexcelled.

Finished, per doz.	$6.00
Nickeled, "	7.20

Silex and Animal Coal, either separate or mixed, but up in neat packages for the trade.

Price per dozen packages, $3.00.

THE DEWDROP FILTER.

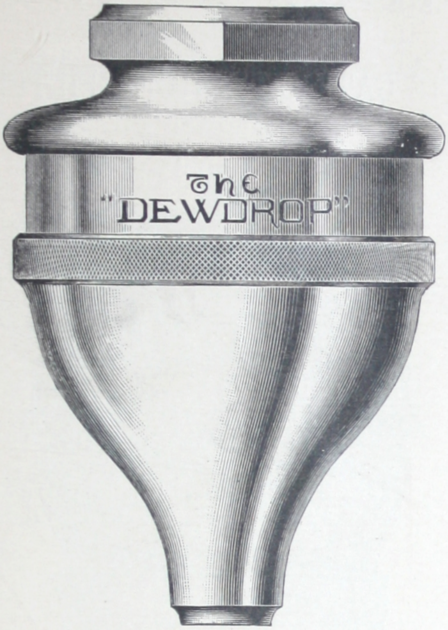


Fig. 43.

THE DEWDROP FILTER is the largest and best sponge filter on the market. It is so constructed that the filtering medium can easily be removed for washing. Per doz., nickel plated, $12.00.

Dewdrop, nickel plated, per doz.	$12.00
Our Reversible Charcoal No. 1, nickeled, per doz.	12.00
Our Reversible Charcoal No. 2, nickeled, per doz.	18.00

	1 gal.	4 gal.
Fine Wool Filter Bags, price, per doz.	$10 00	$40.00

Sponges, per piece, 5c., net.

GRAVITY FILTRATION.

There are many places in the country, away from aqueduct service, where it is desirable to filtrate water, many places where the use of spring, well or cistern water in its natural state is unsafe. The only practical method to adopt in this case is filtration by gravity. There are also some waters like those of the Missouri and Ohio river that contain so large a percentage of impalpable clay, so fine as to be almost in solution, that filtration by pressure is at present impractical. The gravity filter should be used in such localities, and the best one that has yet appeared is the Gate City Stone Filter. This filter has been on the market several years, and filtered successfully the most dirty waters. It has won higher encomiums from the press and able scientists than any other gravity filter ever made. The filtering medium is a natural stone, mined from the earth. It is unlike any other stone. It does not absorb and become foul. Impurities never penetrate it, but lie on the surface, and internally the stone remains as pure and white, after years of use, as when taken from the mine. We have made arrangements with the manufacturers to handle these goods, and all orders addressed to us shall have prompt attention.

FILTRATION BY GRAVITY.

THE GATE CITY STONE FILTER.

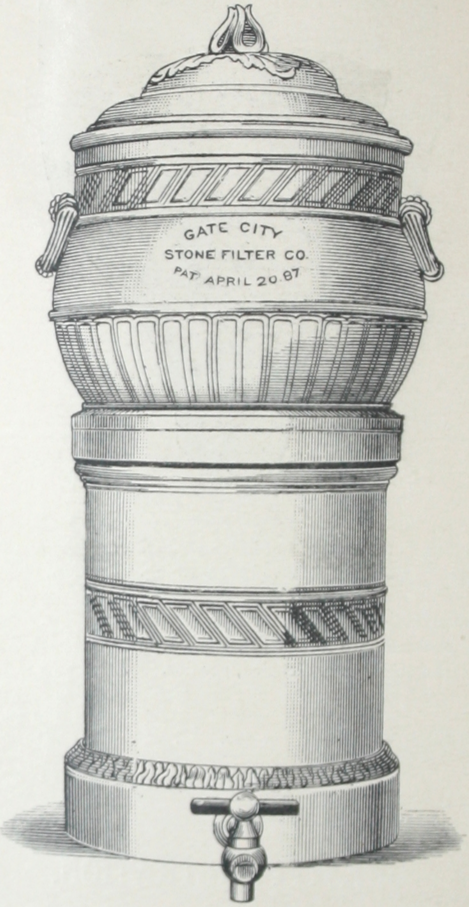


Fig. 44.

No. 10. China, with Patent Ice Chamber.

White,	$33.00
Decorated with Gold and Color Lines,	36.00
Richly Decorated,	40.00

Will filter 10 gallons per day.

Top holds 11 quarts; bottom holds 14 quarts.

HARD BROWN STONEWARE FILTERS.

THESE FILTERS HAVE NO SEPARATE ICE CHAMBERS.

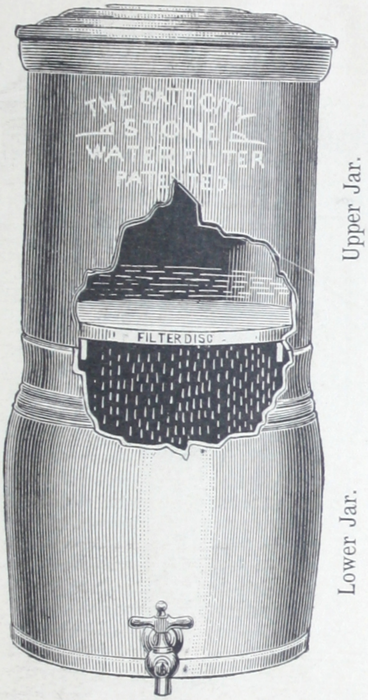


Fig. 45.

This open cut represents our hard brown stoneware Filters, showing the filter disk used in all our filters. This style is made in seven sizes, as follows:

No. 5.	Filters 2 gallons per day.	Price, $4.00.	Top holds 3 quarts;	bottom, 4 quarts.
No. 6.	Filters 3 gallons per day.	Price, $5.00.	Top holds 3 quarts;	bottom, 5 quarts.
No. 7.	Filters 5 gallons per day.	Price, $7.50.	Top holds 4½ quarts;	bottom, 7½ quarts.
No. 8.	Filters 6½ gallons per day.	Price, $9.50.	Top holds 7½ quarts;	bottom, 11 quarts.
No. 9.	Filters 9 gallons per day.	Price, $11.50.	Top holds 9 quarts;	bottom, 13 quarts.
No. 10.	Filters 11 gallons per day.	Price, $14.00.	Top holds 4 gallons;	bottom, 5 gallons.
No. 12.	Filters 20 gallons per day.	Price, $20.00.	Top holds 6 gallons;	bottom, 7 gallons.

WEIGHT 15 TO 55 POUNDS.

NO. 8. CHINA, BROKEN, SHOWING PATENT ICE CHAMBER USED IN CHINA FILTERS.

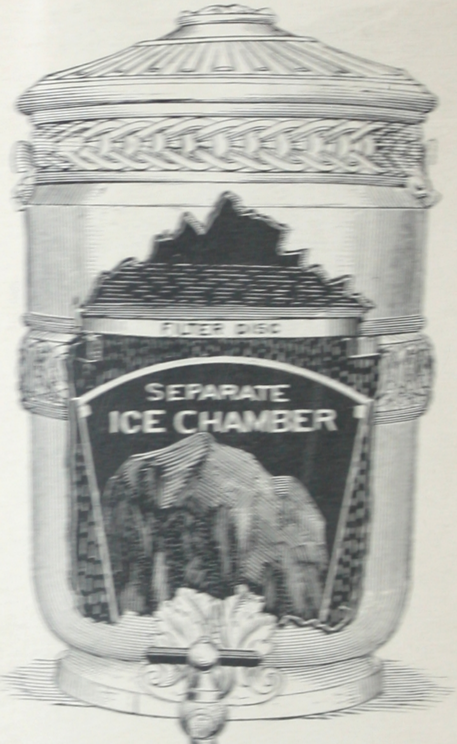


Fig. 46.

This Filter is entirely new in its form and unique raised ornaments which make it very ornamental without decorations.

Price, without decorations, - - - - - - - - -	$17.00
Decorated with gold and color lines, - - - - - - -	20.00
Richly decorated in various colors, - - - - - - -	23.50

Will filter 4 gallons per day. Top holds 4 quarts, bottom holds 4 quarts.

WATER COOLERS

FOR THOSE WHO THINK THEIR WATER IS PURE ENOUGH WITHOUT FILTRATION.

This Cooler is something entirely new in its form and unique raised ornaments, which make it very ornamental without decorations.

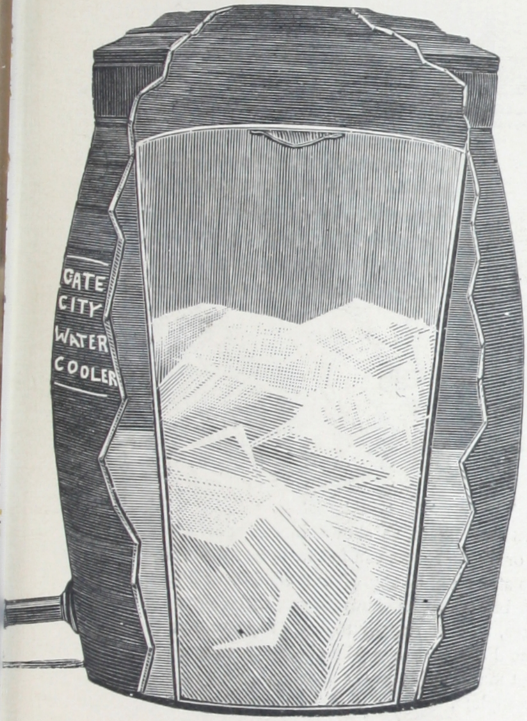


Fig. 47.
Stoneware Cooler, with Pat. Ice Chamber.

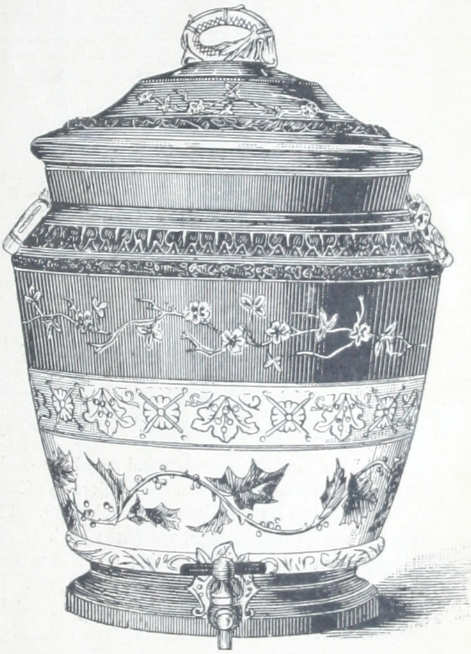


Fig. 48.
China Cooler, with Pat. Ice Chamber.
Capacity, 8½ quarts.

No. 1.	1½ Gallons, Price,	. .	$3.50.
No. 2.	2 Gallons, Price,	. .	4.50.
No. 3.	3 Gallons, Price,	. .	5.50.

Price, without decorations, ...	$24.00
Price, decorated with lines of gold and color,	28.50
Price, richly decorated, ...	34.00

The most desirable of these Water Coolers are made of pure, hard-burned, vitreous porcelain, in white, or handsomely decorated in assorted colors. The cheaper ones are hard-burned brown stoneware, and all have our patent ice chambers, which contain the ice and hold it entirely separate from the water, which it cools to the temperature of cool spring water.

As a rule, there is no water pure enough to drink without filtration. But there are many who are willing to risk it. Nearly all ice, however clear and brilliant it may appear, is absolutely filthy and dangerous. Our Cooler does not permit the ice to touch or mingle with the water. Faucets are heavily plated, and securely fastened with nuts and washers.

THE ICE LASTS ONE-THIRD LONGER.

COOLER AND FILTER STANDS.

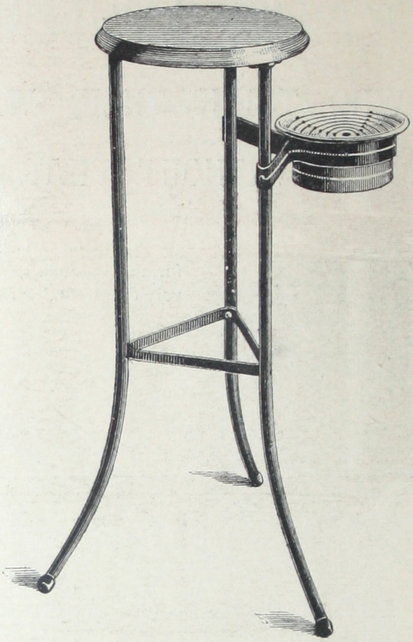


Fig. 49.

10-inch Cherry Tops, Bronzed Iron Legs, 31 inches high. Price,	$5.50
12-inch Cherry Tops, Bronzed Iron Legs, 31 inches high. Price,	6.50
10-inch Cherry Tops, Brass Legs, 31 inches high. Price,	7.50
12-inch Cherry Tops, Brass Legs, 31 inches high. Price,	8.50

This handsome, ornamental stand for coolers and filters, as shown in cut, speaks for itself. No one who has used filters and coolers in offices or dining rooms can fail to note the necessity of a strong stand to set the filters and coolers on. This stand holds any of our coolers or filters. The stands are 30 inches high, are made with iron or brass legs, as shown in cut, with cherry tops and tumbler and waste water holders; made in two sizes, 10 and 12-inch tops. They are put together with screws, and for shipping are taken apart. One dozen in a box 36 inches long 12 inches square, weigh 60 pounds. These are the strongest and best made tables on the market. Very handsome in appearance. In short, the whole arrangement is complete.

HUGHES' PATENT ADJUSTABLE SOLDERING COPPERS.

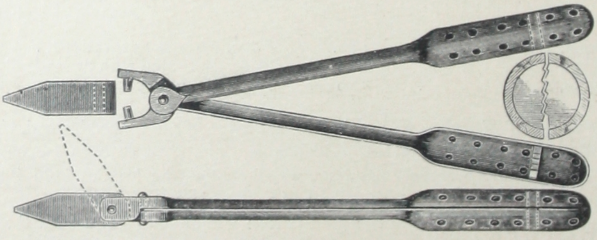


Fig. 50.

Are considered by all plumbers and tinmen to be the best in the market. The handles are of malleable iron and will not break or wear out. The handles being open to admit air, keep cool when in use. The coppers weigh 1 pound each, and can be renewed as occasion requires.

Price, per dozen, $15.00. Coppers, per dozen, $6.00.

ALWAYS LIGHT ABOVE THE GAUZE.

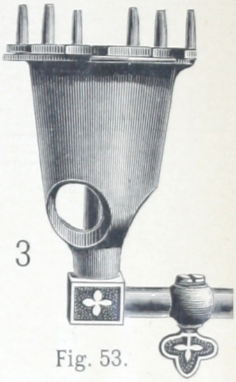
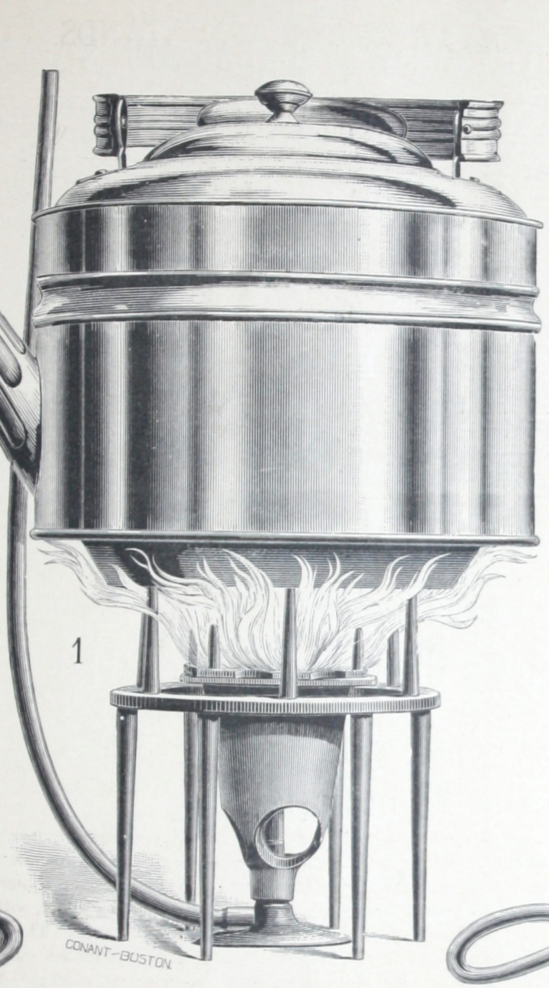
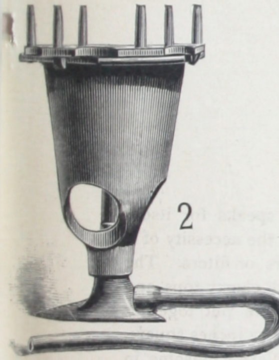


Fig. 53.





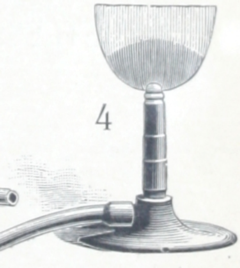


Fig. 52.

Fig. 51.

Fig. 54.

THE LITTLE GIANT GAS HEATER AND COOKER

Is a genuine economiser of gas as the following table will show.

When used with full blaze it consumes five feet of gas per hour; will boil a five gallon kettle as quickly as a coal fire. It is also very convenient for heating irons for pressing and ironing.

Table showing the cost of running the Heater and Cooker with the different prices of Gas.

$1.00 per 1000 ft., ½c. per hour. $2.00 per 1000 ft., 1c. per hour. $3.00 per 1000 ft., 1½c. per hour.
$4.00 per 1000 ft., 2c. per hour. $5.00 per 1000 ft., 2½c. per hour.

Experiments show that we get perfect combustion, producing no smoke. Also getting the greatest amount of heat possible for the quantity of gas consumed. The mixture is about 7 parts air to 1 of gas.

THIS HEATER CAN BE USED IN VARIOUS WAYS.

No. 1 showing the Combination all together for cooking, heating, etc. No. 2 showing the Heater and Droplight, for light, heating or nursery use. No. 3 showing Heater as it applies to any ordinary gas fixture, for nursery or other uses. No. 4 showing Droplight, useful in reading, writing or working, it being easily changed to any position.

Price of whole Combination, with 5 feet of covered tubing, only $2.25. Droplight, with 5 feet of covered tubing, and Heater, only $1.75. Droplight, with 5 feet of covered tubing, only $1.25. Heater to use on ordinary bracket, only 75 cents. Extra covered tubing, 20 cents per foot.

This is the cheapest and most convenient gas arrangement in use.

"RUSTLESS"

WROUGHT IRON WATER, GAS AND STEAM PIPE.

NOTE.—This Pipe can be cut and threaded as readily as ordinary pipe.

BUTT-WELDED.

SIZE, INCHES,	¼	½	¾	1	1¼
Price, per foot,	4c.	5c.	7c.	9½c.	12½c.
Weight, per foot,	.42	.84	1.12	1.67	2.24

LAP-WELDED.

SIZE, INCHES,	1½	2	2½	3	3½	4	4½	5	6
Price, per foot,	22c.	28c.	44c.	58c.	70c.	85c.	$1.00	$1.20	$1.65
Weight, per foot,	2.60	3.61	5.74	7.54	9.00	10.66	12.34	14.50	18.75

FITTINGS FOR PIPE.

"RUSTLESS" CAST IRON WARE SINKS, SOIL PIPE, URINALS, ETC.

SEND FOR NEW CATALOGUE.

THE WELLS RUSTLESS IRON CO.

7 AND 9 CLIFF STREET, NEW YORK CITY.

BRAMAN, DOW, & CO.,

3, 4, AND 5 HAYMARKET SQUARE, - - - - - BOSTON, MASS.,

GENERAL AGENTS FOR PIPE IN NEW ENGLAND.

We have secured from Messrs. Braman, Dow, & Co., a sub-agency for the Rustless Pipe, and can sell it at as low a price as any parties in New England. Orders sent to us shall have prompt attention.

WARNING.

ANY PARTIES INFRINGING PATENTS OWNED BY US WILL BE PROSECUTED TO THE EXTENT OF THE LAW.

SANITARY IMPROVEMENT CO.

SPENCER, MASS., U. S. A., OCTOBER, 1887.

FILLED WITH SILEX OR BONE COAL, EITHER SEPARATE OR MIXED, AS DESIRED.
MOST DEALERS PREFER THE MIXTURE.

THE PHILBROOK
Diamond Water Filter.

The only Purifier of which the works are visible.

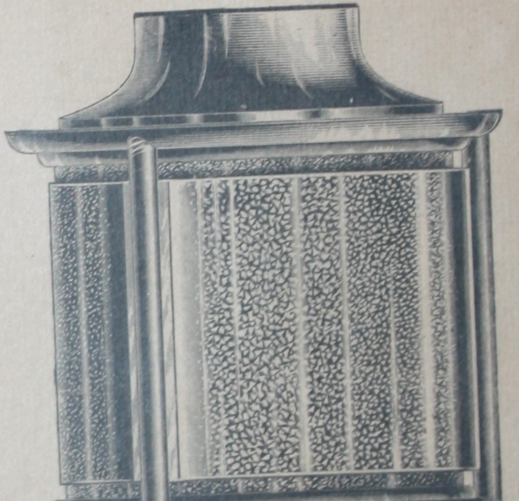


Fig. 55.

Above Cut full size. Price, per dozen, $18.00.

Having purchased of the inventor his entire interest in the Diamond Filter, we are now prepared to furnish them to the trade. This is the most popular low priced Filter ever placed on the market. It is not only elegant and attractive in appearance, but it has the merit of showing the filtration of water while in progress, and the condition at all times of the filtrating material.

SEND FOR DISCOUNT SHEET.